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BIOGRAPHICAL MEMOIR

OF

CHARLES EMERSON BEECHER.

1856—1904.

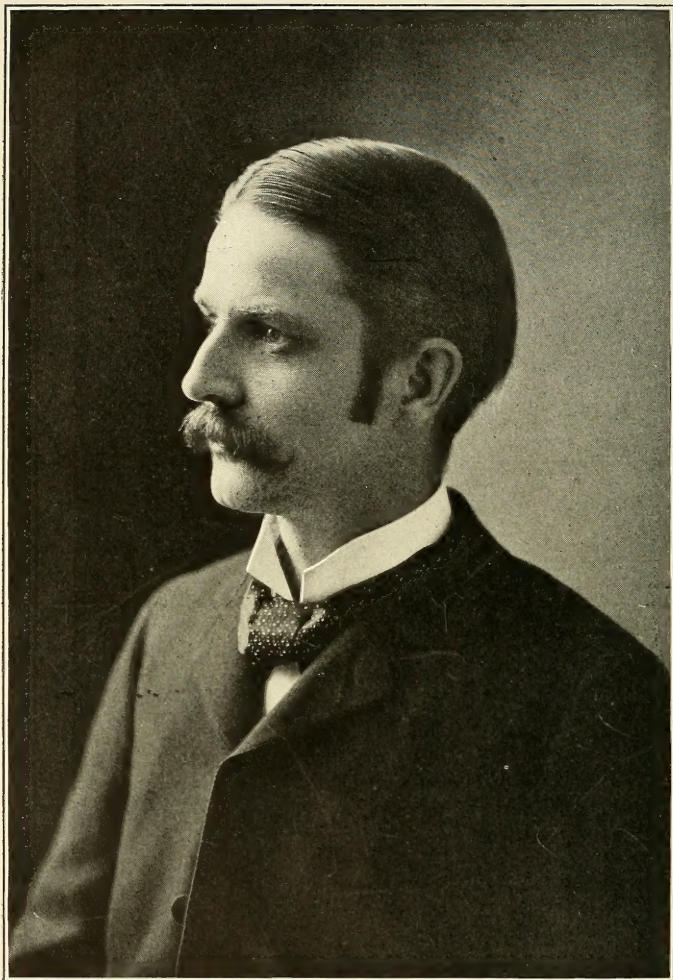
BY

WILLIAM HEALEY DALL.

READ BEFORE THE NATIONAL ACADEMY OF SCIENCES
NOVEMBER 16, 1904.

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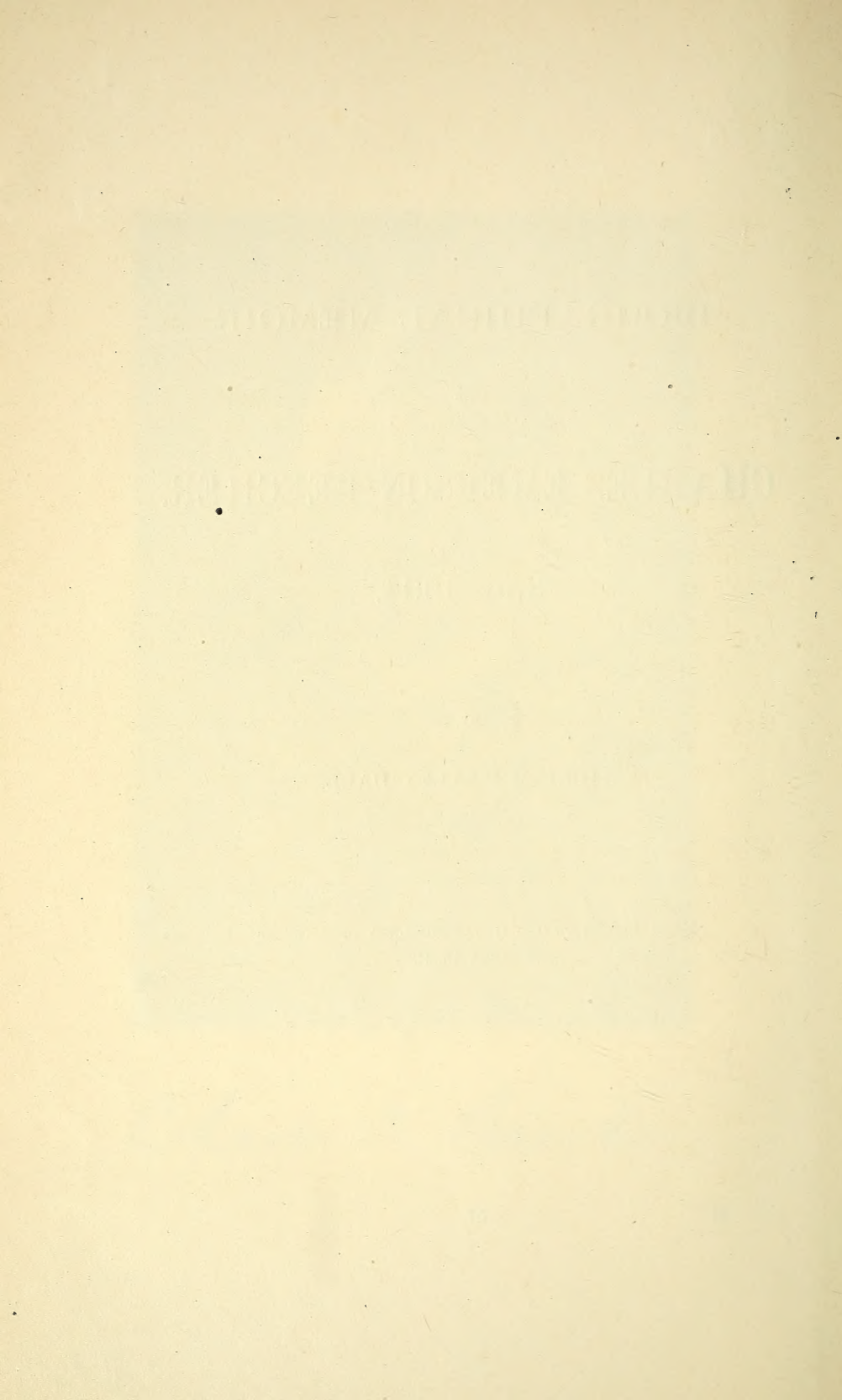
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BIOGRAPHICAL MEMOIR OF CHAS. EMERSON BEECHER.

CHARLES EMERSON BEECHER, eldest son of Moses and Emily (Downer) Beecher, was born in Dunkirk, New York, October 9, 1856.

The mother of Moses Beecher was a Dawson, originally from England. On the Emerson side, the great-grandfather of Charles, Richard Emerson, was from Spofford, New Hampshire, and his wife was Mary Gorton, a direct descendant of Samuel Gorton, of Rhode Island. They moved to Otsego county, New York, in 1749.

Moses Beecher was a banker, and is remembered as a courtly gentleman of the old school, a man of education and refinement. He and his wife were considered persons of more than ordinary cultivation and attainments. Five children, four boys and a girl, were born to them, of whom one brother survives in California.

In the early childhood of Charles his parents removed to Warren, Pennsylvania, where the boy attended private grammar and the public high schools. The surroundings were favorable, the rocks of the vicinity rich in fossils, and at the age of twelve years he began making a collection of the local fossils. Perhaps, as he was always delicate, his parents may have encouraged him as a means of keeping him as much as possible in the open air. At all events, he became much interested, and amassed from the Chemung and Waverley formations of Warren a choice and extensive collection. These tastes soon led him to extend his studies to the minerals and recent shells, in which he always remained interested.

Later he took the scientific course at Michigan University, receiving in 1878 the degree of B. S. from that institution. The late Prof. James Hall, of Albany, kept a watchful eye on all students and collectors of fossils, and, after graduation, young Beecher went to Albany almost immediately, where he was engaged as assistant in the New York State Museum directed by

Professor Hall, and affording unrivaled opportunities for the study of American paleozoic invertebrates. During the ten years spent here by young Beecher he not only became proficient to a remarkable degree in knowledge of the New York faunas, but, having a natural facility in mechanical matters and the use of tools, he became an exceptionally fine preparator of fossils, and always enjoyed the process of disentangling a complicated fossil from its matrix, or the revelations of the saw in making serial sections. Some of the preparations of groups of trilobites left by him in the State Museum are marvels of well-directed and successful effort. In such things he took the pride of a successful craftsman who knows that his work is good.

His first scientific papers were written in coöperation with others, and treated of the recent mollusks. After going to Albany he continued to collect and study the local fauna. These, together with material collected at Warren and near Ann Arbor, or obtained by exchanges, amounting in all to about twenty thousand specimens, he gave to the New York State Museum in 1886 and 1887.

Beside work on the collections at Albany he rendered, according to Prof. James Hall, important assistance to that gentleman in the preparation of his great monographs of the different groups of invertebrates from the New York rocks, especially the Mollusks, Polyzoa, and Corals. These works were printed by the State of New York, and in the prefaces ample acknowledgments are made of Beecher's services.

Always skillful as a draftsman, he added to his small salary from the State by making drawings for professional men at Albany, and most of his papers were illustrated by his own hand. His vacations were spent at localities where collections could be made, especially the richly fossiliferous beds of the Helderberg Mountains, near Albany, New York. Of his collections here Professor Jackson remarks:*

"Indian Ladder," in the Helderberg Mountains, was always a favorite and fertile spot for him, dating back to his Albany days. It is one of the most beautiful and picturesque regions in the Helderbergs. He collected there slabs of limestone containing

**American Naturalist*, vol. xxxviii, No. 450, p. 411.

fossils which were silicified in the most perfect condition for development by etching with acid. From such materials he obtained specimens of surpassing beauty and scientific interest. Beside adult fronds of Bryozoa, Brachiopoda, Crustacea, and other fossils in most perfect preservation, he obtained minute embryos and small species in large numbers in literally wonderful condition of perfection. Young *Bilobites* half a millimeter in length, young *Acidaspis* 0.83 millimeter, and *Arges* 1.15 millimeters long, both of the latter so perfect that he figured them from both the dorsal and the ventral aspects; young *Pleurodictyon* consisting of the initial cup alone, and also others with the first lateral buds; young *Bryozoa* showing initial chambers. Such material, selected with infinite care and patience, formed the basis of a number of papers by Beecher and others.

At this period Beecher published independently a paper on Phyllocarida, a group in which he never lost interest, from material collected by him at Warren, Pennsylvania; and several papers on the recent Rissoidæ. His most important work of this period was based on Brachiopoda obtained from the clays of Waldron, Indiana, in which he was associated with John M. Clarke. This paper is one of the first on the development of Paleozoic Brachiopoda, and opened up several new lines of investigation.

In 1888 Prof. O. C. Marsh, of New Haven, induced Beecher to accept the position of Assistant in Paleontology at the Peabody Museum of Yale University, though for a time he was also named Consulting Paleontologist to the Museum at Albany, and returned there from time to time in connection with the duties of this honorary position. He also pursued his studies at Yale, under Dana, for the degree of Ph. D., which was conferred upon him in 1889, his doctoral thesis treating of the Brachio-spongiidæ, a group of fossil sponges of which the Yale Museum has an unusually fine series. Owing to the illness of Professor Dana, in 1891, Beecher took charge of the classes in Geology during that and the following year, when he was made Instructor in Paleontology, and later Assistant Professor of Paleontology, becoming in 1897 Professor of Historical Geology and a member of the Governing Board of the Sheffield Scientific School of Yale University.

Professor Marsh recognized Beecher's ability and appreciated his loyalty as assistant in the Museum, which on the Paleontological and Geological side Marsh effectively controlled during his lifetime. On Marsh's death, in 1899, Beecher succeeded him as curator of the geological collections, and was made a member of and secretary to the Board of Trustees of the Museum. He then undertook to arrange, develop, and place on exhibition the Marsh collection of fossil vertebrates. This work was done under his direction, though he personally had much to do with the large mounts of *Claosaurus* and *Brontosaurus*, the former of which he has described at length in a paper published by the Connecticut Academy in its Transactions.

In June, 1899, Beecher gave his large and very valuable collection of fossils to the Peabody Museum, as he expressed it, "in grateful recognition of the honors and favors conferred upon me during my connection with the University." These collections comprised over 100,000 specimens and about five hundred types, which had served as a basis for publications by the States of New York and Pennsylvania and various scientific periodicals. The material was chiefly from the Devonian and Lower Carboniferous of the two States mentioned, and represented the private labor, outside of his official working hours, for some twenty years.

"Already interested in studies of the development of organisms from his work on the development of Silurian brachiopods, in 1889 Beecher became deeply interested in the late Professor Hyatt's methods of work—the application of the principles of stages in development, acceleration, parallelism, and dynamic genesis to the unraveling of the genealogical relations of living and fossil animals. Bringing to this work his large and intimate knowledge of species and the structure of fossil types, Beecher entered into this field with characteristic energy and became a leader of the Hyatt school. Beecher's reputation as an investigator will rest chiefly on the rich results he obtained in the critical, painstaking application of those fruitful principles that Professor Hyatt labored so long to establish."*

* R. T. Jackson in *American Naturalist* for June, 1904. This article and Professor Schuchert's memoir in the *American Journal of Science* for the same month have been freely laid under contribution for the purposes of the present memoir.

"To Beecher we owe the first natural classification of the Brachiopoda and Trilobita based on the law of recapitulation and on chronogenesis. He also gave a very philosophic account as to the origin and significance of spines in plants and animals. On these works his reputation in days to come will chiefly rest."*

In 1893 there was discovered in the Utica formation near Rome, New York, a band, not over one-fourth of an inch thick, in which occur the trilobites *Triarthrus* and *Trinucleus*, exquisitely preserved as pseudomorphs in iron pyrite, retaining antennæ and legs and many of the more delicate parts. This discovery, by W. S. Valiant, afforded a hitherto unparalleled opportunity for the study of these animals. Two specimens of Trilobites with legs had been previously known; W. D. Mathew had announced the presence of antennæ, and Walcott by laborious serial sections had determined the number and approximate form of the legs and gills in a number of species. Now, however, a vastly better opportunity for precise observation of the details of the structure of these animals was presented. Beecher took out several tons of the shale and, aided by his remarkable manual dexterity, mechanical skill, and untiring patience, worked out the structure of antennæ, legs, and other ventral appendages with a minuteness which had previously been impossible. Since 1893 he published fifteen papers on the Trilobites, including in 1897 a classification based on these studies, in which the group was divided into three orders, founded chiefly on the development of the free cheeks. At the time of his death he was at work on an extensive monograph of Trilobite structure. He regarded these animals as forming a subclass equal in rank to the Entomostraca and Malacostraca, stating that in nearly every particular "the Trilobite is very primitive and closely agrees with the theoretical crustacean ancestor. Its affinities are with both the other subclasses, especially their lower orders, but its position is not intermediate." More than five hundred specimens of *Trinucleus* and *Triarthrus* were prepared by him, and Schuchert observes that few can appreciate the remarkable talent displayed in clearing the adhering black shale from these small specimens, and that it will be a long time before his equal in this delicate work is likely to appear.

* Charles Schuchert, op. cit.

Beside his works on the Corals, Brachiopods, and Trilobites above referred to, he became in 1892 deeply interested in the significance of spines, accumulating material till 1898, when he published his memoir entitled "The origin and significance of spines," the longest of his papers and the one, according to Schuchert, which he regarded as his best and most philosophic work.

Fortunately for students of Paleontology, most of Beecher's more important papers were reissued in one volume in the Yale Bicentennial series, entitled "Studies in Evolution." He himself regarded the reprinting of already published papers as a kind of extravagance; but those interested in philosophical zoölogy will feel grateful for the combination of so many important contributions to it in the compass of one volume. His views on the classification of the Brachiopoda and Trilobita are incorporated in the translation by Eastman of Zittel's *Grundzüge der Palæontologie*.

In his bachelor days at New Haven, Beecher, with Pirsson, Penfield, and Wells, roomed in "The Attic," the top story of the Sheffield Scientific School, which was comfortably fitted up in true Bohemian style; and Jackson recalls as one of the pleasantest recollections of a visit to New Haven the memory of calls at "The Attic," where, after working hours, delightful intercourse, social and scientific, was held, often far into the night. After moving to New Haven, Beecher made his single journey abroad in company with the late Dr. George Baur, visiting many European museums.

September 12, 1894, Professor Beecher married Miss Mary Salome Galligan, of Warren, Pennsylvania, who, with two daughters, his mother, and one brother, survives him.

Always delicate, of medium height, dark hair and eyes, and apparently good physique, Professor Beecher had the aspect of a man whose years might be long in the land, and of late had seemed to enjoy excellent health, but he died suddenly, from an affection of the heart, February 14, 1904, with no warning to soften the blow to those who loved him. His remains lie in Grove Street Cemetery, New Haven, in the shadow of the Sheffield Scientific School.

The director of the school has said of him: "Quiet and unas-

suming, he never sought adulation, but when there was earnest work to be done, requiring skill, patience, and good judgment, he would labor quietly and industriously, bringing to bear upon the problem such a measure of common sense and of thoughtfulness that confidence in and respect for his conclusions were inevitable. * * * No matter how trivial the duty, it was always done at the appointed time, and thoroughly done. * * * As a friend he was loyal and trustworthy, and his memory will always be cherished by his associates in the Sheffield Scientific School."

One of his pupils has testified to the inspiration given by him to his students, and how his patience, perseverance, and ingenuity served as an incentive to his associates, who were drawn closely to him by his enthusiasm and entire lack of egotism.

There is no doubt that in the death of Professor Beecher not only has Yale sustained a serious loss and Paleontology a severe blow, but the ranks of those capable of bringing to the study of fossils keen insight and a philosophical spirit of inquiry, guided by principles whose value can hardly be exaggerated, are diminished by one whom science could ill afford to lose and to whom, humanly speaking, there should have remained many years of industrious and fruitful research.

MEMBERSHIP IN SCIENTIFIC SOCIETIES.

Ann Arbor Scientific Association.

Albany Institute.

New York Microscopical Society.

American Association of Conchologists.

Connecticut Academy of Arts and Sciences.

Berzelius Society, New Haven, Connecticut (honorary).

Dana Natural History Society, Albany, New York (honorary).

Geological Society of Washington, D. C.

Sigma Xi, New Haven, Connecticut.

Malacological Society of London.

Boston Society of Natural History.

Geological Society of America.

National Academy of Sciences (April 20, 1899).

Geological Society of London (Foreign Correspondent, 1899).

NATIONAL ACADEMY OF SCIENCES.

OBITUARY NOTICES.

- Yale Alumni Weekly, vol. XIII, No. 22, New Haven, Conn., March 2, 1904, pp. 487-489.
- Science, n. s., vol. XIX, No. 481,* March 18, 1904, pp. 453-455.
- American Journal of Science, 4th series, vol. XVII, June, 1904, pp. 411-422, with portrait.
- American Naturalist, vol. XXXVIII, No. 450, Boston, Mass., June, 1904, pp. 407-426; with portrait and bibliography.
- American Geologist, March, 1904, vol. XXXIII, p. 189; July, 1904, vol. XXXIV, pp. 1-13, and portrait.
- Museums Journal, vol. III, pp. 339-340, London, April, 1904.
- Geological Magazine, n. s., dec. v, vol. I, pp. 284-286, London, June, 1904; with portrait.
- Also see New Haven newspapers of February 15-17, 1904.

BIBLIOGRAPHY.*

- List of Land and Fresh-water Shells found within a Circuit of Four Miles about Ann Arbor, Mich. By Bryant Walker and C. E. Beecher. *Proc. Ann Arbor Sci. Assoc.*, pp. 43-46. 1876.
- Planorbis costatus* De Tar and Beecher. Leaflet of 1 page, Albany, Oct. 25, 1878.
- Ceratiocaridæ from the Chemung and Waverley Groups of Pennsylvania. *2nd Geol. Surv. Pa.*, Rep't PPP, pp. 1-22, pls. I, II. 1884.
- Some Abnormal and Pathologic Forms of Fresh-water Shells from the Vicinity of Albany, N. Y. *36th Ann. Rep't N. Y. State Mus. Nat. Hist.*, pp. 51-55, pls. I, II. 1884.
- List of Species of Fossils from an Exposure of the Utica Slate and Associated Rocks within the Limits of the City of Albany. *Ibid.*, p. 77. 1884.
- Notes on a Nevada Shell (*Pyrgula nevadensis*). By R. E. Call and C. E. Beecher. *American Naturalist*, vol. 18, pp. 851-855, pl. XXV. 1884. See also *Proc. Davenport (Iowa) Acad. Sci.*, April, 1886, vol. v, pp. 9-14, figs. 1-5.
- A New Design for a Microscope Cabinet. *Amer. Monthly Mic. Jour.*, vol. 5, pp. 126-127. 1884.
- Carnivorous Habits of the Muskrat. *Science*, vol. 5, pp. 144-145. Feb. 20, 1885.
- A Spiral Bivalve Shell from the Waverley Group of Pennsylvania. *39th Ann. Rep't N. Y. State Mus. Nat. Hist.*, pp. 161-164, pl. XII. 1886.

* For brief notes, book reviews, and newspaper articles, not included in this bibliography, see *American Naturalist*, vol. XXXVIII, No. 450, June, 1904, pp. 418-26.

- Description of a New Rissoid Mollusk. By R. E. Call and C. E. Beecher. *Bull. Washburn Coll. Lab. Nat. Hist.*, vol. 1, pp. 190-192. 1886.
- Lingual Dentition of *Pyrgulopsis nevadensis*. *Proc. Davenport Acad. Sci.*, vol. 5, pp. 11-12. 1886.
- Lingual Dentition of *Amnicola Dalli*. *Ibid.*, vol. 5, pp. 2-3. 1886.
- A Method of preparing for Microscopical Study the Radulæ of Small Species of Gasteropoda. *Jour. N. Y. Mic. Soc.*, pp. 7-11. 1888.
- Brachiospongidae: A Memoir on a Group of Silurian Sponges. *Mem. Peabody Mus., Yale Univ.*, vol. 2, part 1, pp. 1-28, pls. i-vi. 1889.
- The Development of Some Silurian Brachiopoda. By C. E. Beecher and John M. Clarke. *Mem. N. Y. State Mus.*, vol. 1, pp. 1-95, pls. i-viii. 1889. Reprint in *Studies in Evolution*, 1901, pp. 310-398, pls. xv-xxii.
- Note on the Fossil Spider *Arthrolycosa antiqua*, Harger. *Amer. Jour. Sci.* (3), vol. 38, pp. 219-223. 1889.
- On the Lingual Dentition and Systematic Position of *Pyrgula*. *Jour. N. Y. Mic. Soc.*, vol. 6, pp. 1-3, pl. xxi. 1890.
- On the Development of the Shell in the Genus *Tornoceras*, Hyatt. *Amer. Jour. Sci.* (3), vol. 40, pp. 71-75, pl. i. 1890. Reprint in *Studies in Evolution*, 1901, pp. 435-440, pl. xxxiv.
- Koninckina and Related Genera. *Ibid.*, vol. 40, pp. 211-219, pl. ii. 1890.
- On *Leptenisca*, a New Genus of Brachiopod from the Lower Helderberg Group. *Ibid.*, vol. 40, pp. 238-240, pl. ix. 1890.
- North American Species of *Strophalosia*. *Ibid.*, vol. 40, pp. 240-246, pl. ix. 1890.
- The Development of a Paleozoic Poriferous Coral. *Trans. Conn. Acad. Sci.*, vol. 8, pp. 207-214, pls. ix-xiii. 1891. Reprint in *Studies in Evolution*, 1901, pp. 421-428, pls. xxvii-xxxii.
- Symmetrical Cell Development in the Favositidae. *Ibid.*, pp. 215-220, pls. xiv-xv. 1891. Reprint in *Studies in Evolution*, 1901, pp. 429-434, pls. xxxii-xxxiii.
- Development of the Brachiopoda. I. Introduction. *Amer. Jour. Sci.* (3), vol. 41, pp. 343-357, pl. xvii. 1891. Reprint in *Studies in Evolution*, 1901, pp. 229-246, pl. xi.
- Development of the Brachiopoda. II. Classification of the Stages of Growth and Decline. *Ibid.*, vol. 44, pp. 133-155, pl. i. 1892. Reprint in *Studies in Evolution*, 1901, pp. 246-273, pl. xii.
- Development of Bilobites. *Ibid.*, vol. 42, pp. 51-56, pl. i. 1891. Reprint in *Studies in Evolution*, 1901, pp. 399-405, pl. xxiii.
- On the Occurrence of Upper Silurian Strata near Penobscot Bay, Maine. By W. W. Dodge and C. E. Beecher. *Ibid.*, vol. 43, pp. 412-418; map. 1892.
- Ueber die Entwicklung der Brachiopoden. *Neues Jahrb. Mineral. Geol. und Palaeontol.*, 1 bd., 3 heft, pp. 178-197, taf. vi. 1892.

NATIONAL ACADEMY OF SCIENCES.

- Notice of a New Lower Oriskany Fauna in Columbia County, New York. *Amer. Jour. Sci.* (3), vol. 44, pp. 410-411. 1892.
- Revision of the Families of Loop-bearing Brachiopoda. *Trans. Conn. Acad. Sci.*, vol. 9, pp. 376-391, pls. I, II. 1893. Reprint in *Studies in Evolution*, 1901, pp. 290-309, pls. XIV, XXIV.
- The Development of *Terebratalia obsoleta*, Dall. *Ibid.*, vol. 9, pp. 392-399, pls. II, III. 1893. Reprint in *Studies in Evolution*, 1901, pp. 406-409, pls. XXIV, XXV.
- Some Correlations of Ontogeny and Phylogeny in the Brachiopoda. *American Naturalist*, vol. 27, pp. 599-604, pl. xv. 1893. Reprint, *Studies in Evolution*, 1901, pp. 286-289, pl. XIII.
- Development of the Brachial Supports in *Dielasma* and *Zygospira*. By C. E. Beecher and Chas. Schuchert. *Proc. Biol. Soc. Washington*, vol. 8, pp. 71-78, pl. x. 1893. Reprint in *Studies in Evolution*, 1901, pp. 410-417, pl. XXVI.
- Larval Forms of Trilobites from the Lower Helderberg Group. *Amer. Jour. Sci.* (3), vol. 46, pp. 142-147, pl. II. August, 1893.
- A Larval Form of *Triarthrus*. *Ibid.*, vol. 46, pp. 378-379 (in reprint, pp. 361-362). November, 1893.
- On the Thoracic Legs of *Triarthrus*. *Ibid.*, vol. 46, pp. 467-470. December, 1893.
- On the Mode of Occurrence and the Structure and Development of *Triarthrus Becki*. *American Geologist*, vol. 13, pp. 38-43, pl. III. 1894. Reprint in *Studies in Evolution*, 1901, pp. 197-202, pl. VI.
- The Appendages of the Pygidium of *Triarthrus*. *Amer. Jour. Sci.* (3), vol. 47, pp. 298-300, pl. VII. April, 1894.
- Further Observations on the Ventral Structure of *Triarthrus*. *American Geologist*, vol. 15, pp. 91-100, pls. IV, V. 1895. Reprint in *Studies in Evolution*, 1901, pp. 203-212, pls. VII, VIII.
- Structure and Appendages of Trinucleus. *Amer. Jour. Sci.* (3), vol. 49, pp. 307-311, pl. III. 1895. Reprint in *Studies in Evolution*, 1901, pp. 220-225, pl. X.
- The Larval Stages of Trilobites. *American Geologist*, vol. 16, pp. 166-197, pls. VIII-X. 1895. Reprinted in *Studies in Evolution*, 1901, pp. 166-196, pls. III, V.
- James Dwight Dana. *Ibid.*, vol. 17, pp. 1-16; portrait. 1896.
- The Morphology of *Triarthrus*. *Amer. Jour. Sci.* (4), vol. 1, pp. 251-256, pl. VIII. 1896. Reprinted in *Geological Magazine* (London), dec. IV, vol. 3, pp. 193-197, pl. IX. 1896. Also in *Studies in Evolution*, 1901, pp. 213-219, pl. IX.
- On a Supposed Discovery of the Antennæ of Trilobites by Linnæus in 1759. *American Geologist*, vol. 17, pp. 303-306. 1896.
- On the Validity of the Family Bohemillidæ, Barrande. *Ibid.*, vol. 17, pp. 360-362. June, 1896.
- On the Occurrence of Silurian Strata in the Big Horn Mountains, Wyoming, and in the Black Hills, South Dakota. *Ibid.*, vol. 18, pp. 31-33. July, 1896.

CHARLES EMERSON BEECHER.

- Outline of a Natural Classification of the Trilobites. *Amer. Jour. Sci.* (4), vol. 3, pp. 86-106, 181-207, pl. III. February and March, 1897. Reprint in *Studies in Evolution*, 1901, pp. 109-162, pl. II.
- The Systematic Position of the Trilobites, by J. S. Kingsley, with remarks by C. E. Beecher. *Am. Geologist*, vol. 20, pp. 33-40. July, 1897. Reprint in *Studies in Evolution*, 1901, pp. 163-165.
- Development of the Brachiopoda. III. Morphology of the Brachia. U. S. Geol. Survey, Bull. 87, chapter IV, pp. 105-112. 1897. Reprint in *Studies in Evolution*, 1901, pp. 274-285.
- The Origin and Significance of Spines: A Study in Evolution. *Am. Journ. Sci.* (4), vol. 6, pp. 1-20, 125-136, 249-268, 329-359, with plates and text figures. 1898. Reprint in *Studies in Evolution*, 1901, pp. 3-105, pl. I.
- Othniel Charles Marsh. *Am. Journ. Sci.* (4), vol. 7, pp. 403-428, obituary, with portrait. June, 1899. Also (revised) in *Am. Geologist*, vol. 24, pp. 135-157. September, 1899. See also *The Osprey*. January, 1900, vol. IV, pp. 74-76, and *Bull. Geol. Soc. Am.*, XI, pp. 521-537. October, 1900.
- Trilobita. *Textbook of Palaeontology* by Karl A. von Zittel. Revised American edition. London and New York, Macmillan & Co., 1900; pp. 607-638, figs. 1261-1321. Separate copies dated January, 1900.
- Othniel Charles Marsh as an Ornithologist. *The Osprey*, vol. 5, No. 2, pp. 74-76, with portrait. January, 1900.
- Conrad's Types of Syrian Fossils. *Am. Journ. Sci.* (4), vol. 9, pp. 176-178. March, 1900.
- On a Large Slab of *Uintacrinus* from Kansas. *Am. Journ. Sci.* (4), vol. 9, pp. 267-268. April, 1900.
- Restoration of *Stylonurus iacoeanus*, a Giant Arthropod from the Upper Devonian of the United States. *Am. Journ. Sci.* (4), vol. 10, pp. 145-150, pl. 1, August, 1900. Reprint in *Geol. Mag.* London, n. s. (4), VII, pp. 481-485, pl. XVIII. November, 1900.
- The Restoration of a Dinosaur. *Yale Sci. Monthly*, June, 1901, pp. 291-293, pl. 1.
- Note on the Cambrian Fossils of St. Francois Co., Missouri. *Am. Journ. Sci.* (4), vol. 12, pp. 362-363. November, 1901.
- Discovery of Eurypterid Remains in the Cambrian of Missouri. *Am. Journ. Sci.* (4), vol. 12, pp. 364-366, pl. VII. November, 1901. Reprint, *Geol. Mag.*, London, n. s. (4), VIII, pp. 561-4. December, 1901.
- Studies in Evolution. *Yale Bicentennial publications*, pp. I-XXIII, 1-638, plates I-XXXIV. New York. Chas. Scribner's Sons, 1901. Reprints of twenty papers by Professor Beecher as above noted.
- Alpheus Hyatt. *Am. Journ. Sci.* (4), vol. 13, p. 164. February, 1902.
- Note on a New Xiphosuran from the Upper Devonian of Pennsylvania. *American Geologist*, vol. 29, pp. 143-146. March, 1902.

NATIONAL ACADEMY OF SCIENCES.

- The Ventral Integument of Trilobites. *Am. Journ. Sci.* (4), vol. 13, pp. 165-174, pl. II-V, March, 1902; also *Geol. Mag.*, n. s., decade IV, vol. 9, pp. 152-162, pls. IX-XI. April, 1902.
- The Reconstruction of a Cretaceous Dinosaur, *Claosaurus annectans*, Marsh. *Trans. Conn. Acad. Sciences*, vol. 11, pp. 311-324, pls. XLI-XLV. 1902.
- Revision of the Phyllocarida from the Chemung and Waverley Groups of Pennsylvania. *Quarterly Journ. Geol. Soc.* London, vol. 58, part 3, pp. 441-449, pls. XVII-XIX. 1902.
- Recent Papers on the Embryology, Structure, and Habits of Living Brachiopoda. *Science*, n. s., vol. 16, No. 414, pp. 901-902. December 5, 1902.
- Exhibition of Indian Basketry at the Yale University Museum. *Saturday Chronicle*, New Haven, January 17, 1903, p. 13, with five cuts.
- Observations on the Genus *Romingeria*. *Am. Journ. Sci.* (4), vol. 16, pp. 1-11; pls. I-V. 1903.
- Extinction of Species. *Encyclopedia Americana*. New York, 1904, vol. IV.
- Note on a New Permian Xiphosuran from Kansas. *Am. Journ. Sci.* (4), vol. XVIII, pp. 23-24, fig. 1, July, 1904.

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